

REMARKS

Claims 1-2 and 4-11 are pending in this application. By this Amendment, claim 2 is amended to incorporate the subject matter of original claim 3. Claims 1-2 are amended to overcome the 35 U.S.C. §112, second paragraph rejection. Claims 1-2 are amended to further define the presently claimed subject matter and are supported by paragraphs [0023] and [0028] of the specification. Paragraphs [0027], [0034] and [0036] of the specification are amended to correct a typographical error. Claims 4-11 are added. Support for new claims 4-9 is in the original specification at, for example, paragraphs [0010] and [0027]. Support for new claims 10-11 is in the original specification at, for example, paragraph [0028]. Claim 3 is canceled. No new matter is added by this Amendment.

I. Interview

Applicant appreciates the courtesies shown to Applicant's representative by Examiner Nguyen in the March 26, 2009 interview. Applicant's separate record of the substance of the interview is incorporated into the following remarks.

II. Claim Objections

Claims 2 and 3 were objected to for allegedly being informal. In accordance with the Patent Office's recommendation, Applicant has amended claim 2 to recite "method of manufacturing". Claim 3 is canceled.

Withdrawal of the objection is requested.

III. Rejection Under 35 U.S.C. §112, Second Paragraph

Claims 1-3 were rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. Specifically, the Patent Office alleges that term "higher" in claims 1 and 3 is a relative term and the specification does not provide a standard for one of ordinary skill to have ascertained the scope of the present claims. Applicant disagrees.

Applicant has amended claim 1 and claim 2 (which includes the subject matter of original claim 3) to recite that a concentration of the NO_x storage material supported by the lower layer is greater than a concentration of the NO_x storage material which is supported by the catalyst supporting layer.

As admitted by the Patent Office during the interview, the specification provides a sufficient standard for one of ordinary skill in the art to have ascertained the scope of the claims because the term "greater" in claims 1 and 2 means that the concentration of the NO_x storage material in the lower layer is greater, by any amount, than the concentration of the NO_x storage material in the catalyst supporting layer.

As such, Applicant submits that the above information would have permitted one of ordinary skill in the art to have ascertained the scope of the present claims.

Withdrawal of the rejection is respectfully requested.

IV. Rejections Under 35 U.S.C. §103(a)

A. Nakamura

Claims 1-3 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent Application Pub. No. 2002/0091064 ("Nakamura"). Applicant respectfully traverses this rejection.

The Patent Office alleges that Nakamura describes an exhaust gas purifying catalyst comprised of a substrate, a first catalytic layer and a second catalytic layer. However, the Patent Office admits that Nakamura does not describe that the concentration of NO_x storage material supported by the lower layer is higher than the concentration of NO_x storage material which is supported by the catalyst supporting layer. Nonetheless, the Patent Office alleges that one of ordinary skill in the art would have found it obvious to have optimized the concentration of NO_x storage material in the first or second catalytic layers of Nakamura

because the concentration of the NO_x storage material was allegedly a result-effective variable. Applicant respectfully disagrees.

Claim 1 recites an exhaust gas control catalyst, comprising: a porous base material; a catalyst supporting layer which is formed on a surface of the porous base material and which supports noble metal and a NO_x storage material; and a lower layer which is formed at a portion that is in the porous base material and that is below the catalyst supporting layer, and which supports a NO_x storage material, wherein a concentration of the NO_x storage material supported by the lower layer is greater than a concentration of the NO_x storage material which is supported by the catalyst supporting layer, and wherein the concentration of the NO_x storage material to be supported by the lower layer is determined based on a pore volume formed in the lower layer. Claim 2 recites a method of manufacturing an exhaust gas control catalyst using a porous base material.

Nakamura does not describe a porous base material or that the concentration of the NO_x storage material to be supported by the lower layer is determined based on a pore volume formed in the lower layer. As described in the specification, increasing the concentration of the NO_x storage material in the lower layer prevents NO_x storage material from diffusing into the pores of a porous base material during the use of the catalyst and thereby decreasing the amount of NO_x storage material in the catalyst supporting layer. See paragraphs [0012] and [0019]-[0022] and Figures 1A - 2B of the present specification. As such, the subject matter recited in claims 1 and 2 addresses a specific issue stemming from the use of a porous base material, which is not addressed by Nakamura.

Furthermore, Nakamura merely describes a multi-layered exhaust gas purifying catalyst comprised of an inner catalytic layer (Layer A) and an outer catalytic layer (Layer B). Specifically, Nakamura describes that the inner catalytic layer contains (1) at least one noble metal selected from the group consisting of rhodium, platinum and palladium, (2) at least one

metal (i.e., a NO_x storage material) selected from the group consisting of alkali metal, alkali earth metal and rare earth metal and (3) alumina. See Nakamura, paragraphs [0019], [0024] and [0031]. Nakamura further describes that the outer catalytic layer contains (1) rhodium, (2) at least one noble metal selected from the group consisting of platinum and palladium, (3) at least one metal selected from the group consisting of alkali metal, alkali earth metal and rare earth metal and (4) alumina. See Nakamura, paragraph [0019].

Nakamura continues to describe that the content (i.e., concentration) of the at least one metal in the second catalytic layer (B) is larger than the content of the at least one metal in the first layer (A). See Nakamura, paragraphs [0014], [0019] and [0027]. In other words, Nakamura describes that the concentration of the at least one metal (i.e., NO_x storage material) in the second catalytic layer (i.e., the outer layer) is greater than the concentration of the at least one metal in the first catalytic layer (i.e., the inner layer), and thus is clearly directed to an embodiment that is opposite from that which is recited in the present claims (i.e., a greater concentration in the lower layer).

Nakamura does not describe an exhaust catalyst with a porous base layer or that the concentration of the NO_x storage material to be supported by the lower layer is determined based on a pore volume formed in the lower layer. Furthermore, for the two above reasons and because Nakamura describe an exhaust catalyst wherein the concentration of the NO_x storage material is arranged in the opposite manner from that recited in the present claims (i.e., a greater concentration in the lower layer), Nakamura would not have provided one of ordinary skill in the art with any reason or rationale to have manufactured the exhaust catalyst with the configuration recited in the present claims with any reasonable expectation of success.

Finally, the Patent Office fails to establish that Nakamura provides any reason or rationale for one of ordinary skill to have attempted the creation of an exhaust catalyst with

the configuration recited in claims 1 and 2. The mere allegation of optimizing clearly is not sufficient to establish that Nakamura would have provided one of ordinary skill in the art with reason or rationale to have created an exhaust catalyst, wherein the concentration of the NO_x storage layer in the concentration of the NO_x storage material in the lower layer is greater than the concentration of the NO_x storage material in the catalyst supporting layer, particularly where, as here, the reference at best directs one to optimize the concentrations in a manner opposite to that required in claims 1 and 2.

To establish that optimization through routine experimentation would have been obvious, the Patent Office must establish that the relevant variables are known, or indicated, to be result effective, so that one of ordinary skill in the art would have had reason or rationale to have attempted to optimize the values to achieve the indicated result. Specifically, MPEP §2144.05 II B states that before optimization of a particular variable can be found obvious, the variable to be optimized must be described as achieving a particular result.

In the present case, Nakamura merely describes increasing the NO_x concentration in the outer layer, but fails to describe any reason to increase the concentration of the NO_x storage material in the inner layer, or indicate any result that may be achieved by doing such an adjustment, and thus also fails indicate that this property (higher concentration in the inner layer) would affect any particular characteristic of a catalytic layer. Therefore, optimization of this value would not have been obvious from Nakamura.

Withdrawal of the rejection is requested.

B. Brisley

The Patent Office rejected claims 1-3 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 6,413,483 ("Brisley"). Applicant respectfully traverses this rejection.

The Patent Office alleges that Brisley describes an exhaust gas purifying catalyst comprised of a first layer, a second layer and an interlayer disposed between the first and second layers. However, the Patent Office admits that Brisley does not describe that the concentration of NO_x storage material supported by the interlayer being greater than the concentration of NO_x storage material which is supported by the first or second layers. Nonetheless, the Patent Office alleges that one of ordinary skill in the art would have found it obvious to have optimized the concentration of NO_x storage material in the first or second catalytic layers of Brisley because the concentration of the NO_x storage material was allegedly a result-effective variable. Applicant respectfully disagrees.

Brisley describes a multi-layered catalyst for a catalytic converter comprising (1) a first layer that contains platinum and potassium, (2) a second layer containing a noble metal (i.e., rhodium) and (3) an interlayer that is disposed in the middle of the first layer and the second layer. See Brisley, col. 2, lines 42-60. Furthermore, Brisely describes that the "interlayer" is a "porous washcoat" is comprised of a ceria-zirconia mix that is impregnated with a NO_x storage material such as, for example, a barium compound. See Brisley, col. 2, line 65 to col. 3, line 8. As such, Brisley, like Nakamura, does not describe a porous base material or that the concentration of the NO_x storage material to be supported by the lower layer is determined based on a pore volume formed in the lower layer.

Furthermore, the Patent Office fails to establish that Brisley would have provided any reason or rationale for one of ordinary skill to have attempted the creation of an exhaust catalyst with the configuration recited in claims 1 and 2. The mere allegation of optimizing clearly is not sufficient to establish that Brisley would have provided one of ordinary skill in the art with any reason or rationale to have created an exhaust catalyst, wherein the concentration of the NO_x storage layer in the concentration of the NO_x storage material in the

lower layer is greater than the concentration of the NO_x storage material in the catalyst supporting layer.

As described above, in order to establish that optimization through routine experimentation would have been obvious, the Patent Office must establish that the relevant variables are known, or indicated, to be result effective, so that one of ordinary skill in the art would have had reason or rationale to attempt to optimize the values to achieve the indicated result. Specifically, MPEP §2144.05 II B states that before optimization of a particular variable can be found obvious, the variable to be optimized must be described as achieving a particular result.

In the present case, Brisley, like Nakamura, fails to describe any reason to have increased the concentration of the NO_x storage material in the inner layer or indicate that any result that may be achieved by doing such an adjustment, and thus also fails indicate that this property would affect any desirable characteristic of a catalytic layer. Therefore, optimization of this value would not have been obvious from Brisley.

Withdrawal of the rejection is requested.

Furthermore, Brisley or Nakamura do not describe that the concentration of the NO_x storage material supported by the lower layer is (1) 10 weight percent or more, (2) 50 weight percent or more, or (3) 100 weight percent or more, than the concentration of the NO_x storage material supported by the catalyst supporting layer, as recited in claims 4-9. Still further, Brisley or Nakamura do not describe that the concentration of the NO_x storage material to be supported by the lower layer is determined based on a water absorption rate of the lower layer.

C. Conclusion

In view of the above arguments, Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejections.

V. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claim 1-2 and 4-9 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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